

CLAIMS

What is claimed is:

- 5 1. A mild aqueous shampoo composition having excellent detangling and conditioning properties comprising:
 - vi) an alkyl ethoxy sulfate surfactant wherein the alkyl group has an average of 12-16 carbon atoms and a degree of ethoxylation of at least 3,
 - 10 vii) from about 2% to about 7% of a betaine surfactant,
 - viii) from about 2% to about 7% of a hydroxysultaine surfactant,
 - ix) from about 0.1% to about 5% of a non-volatile, water-insoluble silicone,
 - x) at least about 70 wt% water;
- 15 wherein the weight ratio of the betaine surfactant to the hydroxysultaine surfactant is in the range of from about 0.5 to about 1.5, and the weight ratio of the alkyl ethoxy sulfate surfactant to the sum of the weights of betaine surfactant and hydroxysultaine surfactant is in the range of from about 0.5 to about 1.5.
- 20 2. The composition according to claim 1, wherein the alkyl ethoxy sulfate surfactant is present at a level from about 5% to about 10% by weight of the composition.
3. The composition according to claim 1, wherein the betaine is selected from the group consisting of lauryl betaine, coco betaine, cocoamidobetaines,
25 cocoamidopropyl betaine, oleyl betaine, caprylamidopropyl betaine, lauramidopropyl betaine, isostearylamidopropyl betaine, coco imidoazolinium betaine, and mixtures thereof.

4. The composition according to claim 1 wherein the hydroxysultaine is selected from the group consisting of C₈-C₁₈ alkylamidopropyl hydroxysultaine, lauryl hydroxysultaine, tallowamidopropyl hydroxysultaine, erucamidopropyl hydroxysultaine, and a C₈-C₁₈ alkylether amidopropyl hydroxysultaine, and mixtures thereof.
5. The composition according to claim 1, wherein the non-volatile, water-insoluble silicone is a microemulsion.
6. The composition according to claim 1, wherein the non-volatile, water-insoluble silicone has a viscosity greater than 10,000 CST and is selected from the group consisting of dimethicone, dimethiconol, a cross-linked dimethicone or dimethiconol, a silicone gum, an organomodified silicone and mixtures thereof.
7. The composition according to claim 1 wherein the wt% ratio of the betaine surfactant to the hydroxysultaine surfactant is in the range of from about 0.75 to 1.25.
8. The composition according to claim 1, wherein the wt% ratio of the alkyl ethoxy ether sulfate to the sum of the betaine surfactant and the hydroxysultaine surfactant is in the range of about 0.7 to 1.3.
9. The composition according to claim 1 further comprising a cationically modified cellulose.
10. The composition according to claim 9 wherein the cationically modified cellulose is selected Polyquaterium-10.
11. The composition according to claim 1 further comprising a polyethylene glycol fatty diester selected from the group consisting of PEG 120 methyl glucoside dioleate,

PEG-150 pentaerythrityl, PEG-75 dioleate, PEG-150 distearate and mixtures thereof.

12. The composition according to claim 11 wherein the polyethylene glycol fatty diester
5 is PEG 150 distearate,

13. The composition according to claim 11 further comprising an electrolyte selected
from the group consisting of sodium chloride and sodium citrate, sodium sulfate,
sodium bromide, sodium iodide and mixtures thereof.

14. The composition according to claim 1 wherein the composition has either a Zein
solubility of less than 1% as measured by the Zein Solubility In-Vitro Assay or a %
permeability of fluorescein leakage less than 10% as measured by the Fluorescein
Leakage Assay; and wherein the composition has a wet-combing force less than
15 about 25 gm-force as measured by the Wet and Dry Combing Force In-Vitro Assay.

15. The composition according to claim 1 further comprising aesthetic and adjunct
shampoo ingredients selected from the group consisting of perfumes, pearlizing and
opacifying agents, interference pigments, dyes, colorants, sensates, preservatives,
20 thickeners, emulsion stabilizers, and mixtures thereof.

16. The composition according to claim 1 further comprising skin and hair benefit agents
selected from the group consisting of cholesterol, ceramides, and
pseudoceramides, non-silicone hair conditioning agents, humectants, antimicrobial
25 agents, sunscreens, chelating agents, botanical extracts, and mixtures thereof.

17. A mild aqueous shampoo composition having excellent detangling and conditioning properties comprising:

- i) from about 5% to about 12% of an alkyl ethoxy sulfate wherein the alkyl group has an average of 12-16 carbon atoms and the degree of ethoxylation is at least 3.
- ii) from about 2% to about 7% of a betaine surfactant selected from the group consisting of alkylamido betaine, alkyl betaine, and alkyl amidoalkyl betaine,
- iii) from about 2% to about 7% of an alkylamido hydroxysultaine,
- iv) from about 0.05% to about 2% of a cationically modified cellulose,
- v) from about 0.1% to about 5% of a non-volatile, water-insoluble silicone,
- vi) from about 0.02% to about 1.0% of a polyethylene glycol fatty diester,
- vii) from about 0.1% to about 1.0% of an electrolyte selected from the group consisting of sodium chloride, sodium citrate, sodium sulfate, sodium bromide, sodium iodide and mixtures thereof.
- viii) at least 70 wt% water;

wherein the weight ratio of the betaine surfactant to the alkylamido hydroxysultaine is in the range of from about 0.5 to about 1.5, and the weight ratio of the alkyl ethoxy ether sulfate to the sum of the weights of betaine surfactant and alkylamido hydroxysultaine components is in the range of from about 0.5 to about 1.5;

wherein the shampoo composition has either a Zein solubility of less than 1% as measured by the Zein Solubility In-Vitro Assay or a % permeability of fluorescein leakage less than 10% as measured by the Fluorescein Leakage Assay; and

wherein the composition has a wet-combing force less than about 25 gm-force as measured by the Wet and Dry Combing Force In-Vitro Assay.

18. A method of shampooing children's hair to achieve clean, tangle-free, and conditioned hair without eye irritation said method comprising the step of treating the hair with the shampoo composition according to claim 1.